

WE CLAIM:

1. A scanning unit for a position measuring instrument for optical scanning of a measuring graduation, the scanning unit comprising:
 - a light source that emits light in a direction towards a measuring graduation that generates modified light from said emitted light;
 - a detector that receives said modified light; and
 - a lens array, disposed upstream of said detector and comprising a plurality of optical lenses, that generates a defined image of a region of said measuring graduation, scanned by said emitted light, on said detector, wherein an image magnification of said lens array is greater than 0 and less than or equal to 2.
2. The scanning unit of claim 1, wherein said image magnification is equal to 1.
3. The scanning unit of claim 1, wherein said lens array comprises a plurality of lenses disposed in a plane that is oriented such that said modified light intersects said plane.
4. The scanning unit of claim 3, wherein said plane extends both in a measurement direction, in which said scanning unit is movable relative to said measuring graduation, and perpendicular to said measurement direction.
5. The scanning unit of claim 3, wherein said lens array comprises a first group of lenses disposed in said plane and a second group of lenses disposed in a second

plane extending parallel to said plane.

6. The scanning unit of claim 5, wherein said first group of lenses are combined in on or more cells that includes a first cell that comprises:

a first lens from said first group of lenses; and

a second lens from said first group of lenses,

wherein said first group of lenses are each disposed one after the other, perpendicular to said plane and said second plane.

7. The scanning unit of claim 6, wherein at least some of said modified light first passes through said first lens and then reaches said second lens.

8. The scanning unit of claim 7, wherein essentially all of said modified light that passes through said first lens then reaches said second lens.

9. The scanning unit of claim 7, wherein said modified light that passes through said first lens does not reach a lens of said second group of lenses that form a second cell.

10. The scanning unit of claim 6, wherein said first group of lenses are disposed side-by-side in said plane and in a direction perpendicular to a measurement direction and are each offset from one another in said measurement direction.

11. The scanning unit of claim 6, wherein in said first cell a product of an

image magnifications of said first lens and said second lens is less than or equal to 1.

12. The scanning unit of claim 6, wherein in said first cell an amount of image magnification of said first lens is less than an amount of image magnification of said second lens.

13. The scanning unit of claim 9, characterized in that an amount of image magnification of said first lens is less than an amount of image magnification of said second lens so that beams of a light beam which pass through said first lens do not reach said lens of said second group of lenses.

14. The scanning unit of claim 5, wherein focal lengths of said first group of lenses differ from focal lengths of said second group of lenses, and wherein a focal length of a first lens of said first group of lenses that said modified light passes through first is greater than a focal length of a second lens of said first group of lenses.

15. The scanning unit of claim 1, further comprising a diaphragm structure assigned to said lens array.

16. The scanning unit of claim 7, further comprising a diaphragm structure assigned to said lens array.

17. The scanning unit of claim 16, wherein said diaphragm structure is disposed in said plane.

18. The scanning unit of claim 16, wherein said diaphragm structure is disposed between said first group of lenses and said second group of lenses.

19. The scanning unit of claim 6, wherein said diaphragm structure comprises a diaphragm assigned to said first cell.

20. The scanning unit of claim 19, wherein said modified light is guided by said diaphragm structure in such a way that those beams which have passed through said first lens do not reach said lens of said second cell.

21. A position measuring instrument, comprising:
a measuring graduation comprising at least one optically scannable track;
and
a scanning unit comprising:
a light source that emits light in a direction towards said measuring graduation so that said measuring graduation generates modified light from said emitted light;
a detector that receives said modified light; and
a lens array, disposed upstream of said detector and comprising a plurality of optical lenses, that generates a defined image of a region of said measuring graduation, scanned by said emitted light, on said detector, wherein an image magnification of said lens array is greater than 0 and less than or equal to 2.

22. The position measuring instrument of claim 21, wherein said lens array comprises a plurality of lenses disposed in a plane that is oriented such that said modified light intersects said plane.

23. The position measuring instrument of claim 22, wherein said plane extends both in a measurement direction, in which said scanning unit is movable relative to said measuring graduation, and perpendicular to said measurement direction.

24. The position measuring instrument of claim 22, wherein said lens array comprises a first group of lenses disposed in said plane and a second group of lenses disposed in a second plane extending parallel to said plane.

25. The position measuring instrument claim 24, wherein said first group of lenses are combined in on or more cells that includes a first cell that comprises:

a first lens from said first group of lenses; and

a second lens from said first group of lenses,

wherein said first group of lenses are each disposed one after the other, perpendicular to said plane and said second plane.

26. The position measuring instrument of claim 25, wherein at least some of said modified light first passes through said first lens and then reaches said second lens.

27. The position measuring instrument of claim 26, wherein said modified light that passes through said first lens does not reach a lens of said second group of

lenses that form a second cell.

28. The position measuring instrument of claim 25, wherein said first group of lenses are disposed side-by-side in said plane and in a direction perpendicular to a measurement direction and are each offset from one another in said measurement direction.

29. The position measuring instrument of claim 21, further comprising a diaphragm structure assigned to said lens array.